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MR. GOMPERTZ'S PAPERS.

To the Editor of the Assurance Magazine.

SIR,—Mr. Gompertz has done me the honour to make me the medium of communication between himself and the members of the Institute of Actuaries, and has addressed the following letter to me for publication in the *Journal* of the Institute, in reference to the recent controversy on the subject of his celebrated paper, read before the Royal Society on the 16th of June, 1825, and published in the *Philosophical Transactions* for that year, "On the Nature of the Function expressive of the Law of Human Mortality."

The question as to the undoubted claim of Mr. Gompertz to be considered the sole and original discoverer of the theorem enunciated in that paper being now so definitively set at rest, by the complete analysis of the whole question by Mr. Sprague, in his able paper, read before the Institute of Actuaries on the 25th of February last, I may, perhaps, be allowed to express an opinion—in which I know I shall be joined by every gentleman who has the pleasure of Mr. Gompertz's acquaintance—that he would have been the very last person to fail to acknowledge any claim to an independent discovery, had such been made; and I cannot, perhaps, conclude better than by quoting Mr. Gompertz's own words on this point, which happen to occur in the course of a previous paper, read before the Royal Society on the 29th of June, 1820,—“To a true philosopher, it will ever be much more pleasing to grant even more praise than is actually due, than to pluck the laurel from the deserving brow.”

This, Sir, is a sentiment, which I think you will agree with me is no less elegant in expression than it is indicative of the known amiability of disposition which has always characterised this distinguished mathematician and actuary.

I have the honour to be, Sir,

Your obedient servant,

*Alliance Assurance Company,
12th March, 1861.*

H. W. PORTER.

LETTER FROM BENJAMIN GOMPERTZ, Esq., F.R.S.

*Kennington Terrace, Vauxhall,
6th March, 1861.*

MY DEAR SIR,—Not having been sufficiently in health since the gentlemen who are members of the Institute of Actuaries did me the honour to elect me an honorary member of their excellent establishment, to attend the meetings, nor to have been active in adding my mite to the papers which it publishes; with your sanction, I wish you to be the medium to express my thanks to several of the members for their frequent kind mention of my name in their valuable papers; but, in particular, I wish to allude to the distinguished and highly talented Professor De Morgan, for the two papers, cleverly written, to prevent the subject of my paper on the "Law of Human Mortality," published in the *Transactions of the Royal Society* for 1825, being lowered in the estimation of scientific men, in consequence of a claim made by a gentleman, who, with rather sharper criticism than I believe

ought to have been directed either to me or my paper, of having, I think about the year 1832, made the discovery independently of me; but I am not concerned in that claim; because, whether he did, or did not, make a discovery of a theorem, seven years after it had been honoured by the approbation of scientific men, after my publication of it, cannot be an injury to me. Still, I think it was not wise of him to try to use arguments to establish his claim, which would, I think, by their close resemblance to my own words, rather prove the reverse. I have no wish to rob him of any claim, which either he, or his friends for him, may consider his due, but, on the contrary, I wish well to everyone who may, virtuously and without jealousy, feel inclined to tread in a new path to promote the objects of science, or who, with a view to add information to knowledge acquired, should modestly follow the steps pointed out by an earlier labourer, who may have ploughed in the same field in which he may hope to grow his wheat, or who may have planned a garden in which myrtles may grow, and laurels thrive, to adorn the brow of some future labourer, who may, by arduous labour joined to humble pretensions, merit praise.

I am willing to own that there are many typographical errors which disfigure the paper, which may lead a school-boy from the direct meaning of the information I meant to convey; or which may so act on the mind of a lazy student as to confuse his judgment; but in all the mathematical papers I have published, I have found such errors constantly to occur, notwithstanding all the pains I have paid to prevent them; but I observe, that as long as mathematical papers are printed, without having a sufficiently clever mathematical superintendent of the press, that annoyance will intrude.

It is my intention, or at least my wish, to publish, either in the *Transactions of the Royal Society*, or elsewhere, a notice to correct those errors; yet, I observe, such errors may have the advantage of causing a reader to go more deeply into the meaning of an author, by obliging him to dig into the ground, instead of flying over the surface. I have, for two or three years, been endeavouring to add matter of importance, in my own opinion, to the subjects of my papers of 1820 and of 1825; but the state of my health has so far interfered with my object as to prevent my getting up my intended paper, to present to the Royal Society. And in a paper I wrote for the International Congress, held in July last, I gave hints—which, I flatter myself, will be interesting, when published by the Commissioners—relative to the subject of the paper I was writing for the Royal Society, on “Mortality and Invalidity,” with some striking tables, corroborative of my new views on the subject, and hints of the very extensive service of the law of mortality I had further discovered in calculating values, with respect to all sorts of intricate cases and complications of intricacies; and in the paper which I am now endeavouring to induce my health to proceed with, I have improved parts of the paper I was then writing, but the hints do not much go into the abstruse part of my paper, as I did not consider that portion adapted to the intention of the Congress, and because I preferred also to make the Royal Society, if I were allowed that honour, the medium of the mathematical essence of the paper through which my views went forth to the public. In my paper of 1825, I showed, from tables and the law of mortality for portions of life, means of calculating, without much difficulty, the value of annuities on many joint lives; and the ingenious and worthy and highly talented Professor De Morgan has shown, in a paper he wrote,

published among the papers of the Institute, that if my formula $a \cdot \overline{b}^x$ were absolutely true throughout, it would give the means of calculating the values of annuities on any number of joint lives; but as with the same constants a , b , q , the term of its applicability is limited, the method will not invariably correctly apply: and I think it proper to remark, that my investigation, published in the *Transactions*, ought not to have led the gentleman, who considers himself the second independent discoverer, to consider them absolutely constant, and my having pointed out that, at the ages between 60 and 100, they had different values, proves what my views with respect to those elements were; and I further observe, that my subsequent researches, hinted at in the paper I wrote for the Congress, and further to be explained in the paper which I am about writing, show the curious nature of the variability of those elements, and explain by what manner they put on the appearance, during long periods, of constancy. And the consequence of such slow variability of the elements which may be considered, for long periods, constant, together with the law of their variability, give the command of estimations with accuracy of most complicated cases of intricacy, which will be found useful. But by my improved statement of the law of mortality, by the methods which will be pointed out in the paper I am about to present, when sufficiently advanced, to the Royal Society, a great variety of complicated cases of contingencies will be very easily grappled with.

The tables of two joint lives, published by the Society of Useful Knowledge, are extremely useful. The famous tables of Barrett, on the Northampton Tables of Mortality of every combination of three lives, are too voluminous and too rare (if at all to be met with) to be generally useful, even where they apply; but my method, hinted at in the paper I wrote for the Congress, and which I hope shortly to lay before the Royal Society, will apply to any number of lives, whether they be all subject to the same law or to different given laws, pertaining to different individuals of the whole and through a very wide complication of conditions and contingencies. I therefore flatter myself, should my health last to enable me to proceed with, at least part of, my subject, the paper will be well received.

I wish you, my dear Sir, to present this letter to the Institute, as I wish in it to notify my thanks to Mr. Sprague, whom I have not the honour of personally knowing, for his kind and able paper in vindication of my claim to be the sole independent publisher of a theorem which, I am gratified to say, appears of importance to the scientific world — I say, the sole independent publisher, though the fact of my being the first independent discoverer has not been denied me, even by the gentleman who claims to be the second discoverer, because that claim, should it be ever proved to be a just one, would not interfere with me.

I am, my dear Sir,

Yours, with regard,

To H. W. PORTER, Esq.

BENJ^N GOMPERTZ.